

CLAIMS

What we claim is:

1. A chlorine dioxide generating apparatus, comprising:
 - a venturi having an inlet end for receiving fluid and an outlet end for expelling fluid;
 - a venturi body coupled to said outlet end of said venturi, said venturi body forming an extension of said outlet end of said venturi;
 - a casing surrounding said venturi and defining a plenum therebetween, said casing being movably connected to said venturi body;
 - a first sealing means provided between said casing and said venturi body for sealing said plenum;
 - a collar surrounding an end of said casing adjacent said inlet end of said venturi, said collar and said casing defining a plenum entry ring therebetween;
 - a second sealing means provided between said collar and said casing for sealing said plenum entry ring;
 - at least one feed port for tangentially receiving reactants, said feed port extending through said collar and communicating with said plenum entry ring;
 - at least one rejection port for passing chlorine dioxide into said fluid, said injection port extending through said venturi adjacent said outlet end thereof, said injection port being in communication with said plenum; and
 - wherein movement of said casing changes the volume and area of said plenum to determine the capacity of the generating apparatus.
2. The apparatus as claimed in claim 1 wherein an increase of said plenum volume and area facilitates an increase of said capacity of said generating apparatus and a decrease of said plenum volume and area facilitates a decrease of said capacity of said generating apparatus.
3. The apparatus as claimed in claim 1 wherein said venturi body has an externally threaded portion.
4. The apparatus as claimed in claim 1 wherein said casing has an internally threaded portion.
5. The apparatus as claimed in claim 4 wherein said casing threadably engages said venturi body and is axially movable thereon.

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6. The apparatus of claim 1 wherein said plenum is conical in shape and decreases in volume in the downstream direction.

7. The apparatus as claimed in claim 1 wherein said first and second sealing means is at least one O-ring.

8. The apparatus as claimed in claim 1 wherein said fluid is water.

9. A method for generating chlorine dioxide, comprising the steps of:

1) moving a casing relative to a venturi body to change the size of a plenum in order to generate a predetermined amount of chlorine dioxide, said plenum being defined between said casing and a venturi and sealed therebetween, said venturi having an inlet end and an outlet end, said outlet end being attached to said venturi body;

2) feeding fluid into said inlet end of said venturi;

3) feeding chlorine dioxide generating reactants into a plenum entry ring through a feed port, said feed port extending through a collar, said plenum entry ring being defined between said casing and said collar and sealed therebetween, said collar being located at said inlet end of said venturi; and

wherein said reactants mix together in said plenum and react to form chlorine dioxide which exits through an injection port located at said outlet end of said venturi, thereby joining said fluid at the outlet end of said venturi.

10. The method as claimed in claim 9 wherein said fluid is water.

11. The method as claimed in claim 10 wherein said chlorine dioxide generating reactants are chlorine and aqueous sodium chlorite solution.

12. The method of claim 10 wherein said chlorine dioxide generating reactants are fed tangentially through said feed port.

13. The method of claim 12 wherein said plenum is conical in shape and decreases in volume in the downstream direction whereby said chlorine dioxide generating reactants accelerate through the plenum.

14. A chlorine dioxide generating apparatus, comprising:

a venturi having an inlet end for receiving fluid and an outlet end for expelling fluid;

a casing surrounding said venturi and defining a plenum therebetween, said casing being movably connected to said outlet end of said venturi;

a first sealing means provided between said casing and said venturi for sealing said plenum;

a collar surrounding an end of said casing adjacent said inlet end of said venturi, said collar and said casing defining a plenum entry ring therebetween;

a second sealing means provided between said collar and said casing for sealing said plenum entry ring;

at least one feed port for tangentially receiving reactants, said feed port extending through said collar and communicating with said plenum entry ring;

at least one injection port for passing chlorine dioxide into said fluid, said injection port extending through said venturi adjacent said outlet end thereof, said injection port being in communication with said plenum; and

wherein movement of said casing changes the volume and area of said plenum to determine the capacity of the generating apparatus.

15. An apparatus as claimed in claim 1 wherein said casing and said collar form a single piece.